15.9120
15.9300

SOV/69-21-6-17/19

AUTHOR: Epshteyn, V.G. and Chernykh, Z.V.

TITLE: A Study of Bond Properties in the System Rubber-Carbon Black

PERIODICAL: Kolloidnyy zhurnal, 1959, Vol 21, Nr 6, pp 754-761 (USSR)

ABSTRACT: This is a study of the change of vulcanisate moduli caused by repeated heating and elongation of selected vulcanisate specimens. The investigation was carried out to determine the characteristics of linkage in the system rubber-carbon black. For the experiments the authors selected optimum vulcanisates (temperature of vulcanization 143°C) of the non-crystallizing rubbers SKB and SKS-30A (thermo-masticated rubber with plasticity 0.50). The mixtures were prepared according to standard prescriptions with lamp black, furnace black and burner black ("kanal'naya-, pechnaya-i for-

Card 1/5

A Study of Bond Properties in the System Rubber-Carbon Black

sunochnaya sazha") components added in dosages of 20, 40, 60, 80 and 100 parts by weight to 100 parts by weight of rubber. The investigated specimens had the form of strips 10 mm wide and 2±0.1 mm thick. The length of the working section of the specimen was equal to 40 mm and was determined with the distance between the gripping devices of a thermostatic tensile-testing machine of the type TsMG and T (firm "Shopper"). The specimens were stretched at a rate of 100 mm/min up to an elongation of 200%. Subsequent concentration was carried out at the same rate. The deformation cycles were repeated four times. The stress-strain curves were plotted with a self-recording device. The deformation values were calculated with regard to the length of the working section prior to elongation (other deformations were not considered). Modulus change during repeated deformations was determined at 20, 40, 70 and 100°C.

Card 2/5

A Study of Bond Properties in the System Rubber-Carbon Black

The effect of repeated deformation on the moduli of the vulcanisates is shown in table 1 and graph 1 and 2a,b. It could be established that the drop of the moduli depends on the type of rubber, the type of carbon black and its dosage. The effect of temperature on the moduli is shown in graph 3 and table 2. A comparative study of the data of graph 1 shows that under the conditions of high temperatures (100°C) repeated deformation calls forth a less pronounced drop of the moduli as compared with deformation carried out at 20°C. The same can be seen from a comparison of table 1 and 3 (Table 3 - change of modulus in dependence on type and content of carbon black at 100°C.) The effect of black carbon content appears as the same at 100 and at 20°C, and the basic drop of the moduli takes place during the first elongation. Rise of temperature, therefore, calls forth a change in the modulus value of carbon black vulcani-

A Study of Bond Properties in the System Rubber-Carbon Black

sates, which depends on the type of rubber as well as on the type and content of carbon black. Change of the moduli in dependence on rise of temperature makes possible to evaluate the interaction between rubber and carbon black. It was further found that modulus drop due to deformation was more pronounced than modulus drop called forth by rise of temperature, a phenomenon which can be explained with a steric hindrance created by the carbon black chains during desorption of rubber molecules while the mixture is heated. The authors also showed the difference in carbon black and crystallite reinforcement, the rubber-black carbon bond showing a greater heat stability (Table 4). In their introductory notes the authors mention the scientist P.P. Kobeko [Ref 2]. There are 4 tables, 2 sets of graphs, 1 graph and 17 references, 12 of which are Soviet and 5 English.

SOV/69-21-6-17/19

A Study of Bond Properties in the System Rubber-Carbon Black

ASSOCIATION: Yaroslavskiy tekhnologicheskiy institut (Yaroslavl' Technological Institute)

SUBMITTED: June 18, 1958

Card 5/5

2 Ch1
S/081/61/000/015/134/13
B102/B101

11.2320

AUTHORS: Epshteyn, V. G., Kholodkovskiy, B. N., Polyak, M. A., Bakharev, A. I.

TITLE: New accelerators, derivatives of triethanolamine

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 15, 1961, 603, abstract 15O381 (Sb. "Vulkanizatsiya rezin. izdeliy". Yaroslavl', 1960, 56 - 68)

TEXT: The properties of sulfur rubbers of Hk (NK) and butadiene-styrene with new accelerators are described. These accelerators are: "trica" - triethanolamine salt of Captax, "triethal" - disubstituted triethanolamine salt of phthalic acid, and "kiethal" - monosubstituted triethanolamine salt of phthalic acid. These accelerators increase the vulcanization rate, improve the resistance to scorching and aging, and also the physical and mechanical properties. They are most effective when applied to combinations with Altax, Captax, and thiuram. Test results of these rubbers and their kinetics of vulcanization are presented. [Abstracter's note: Complete translation.]

Card 1/1

28039 S/081/61/000/015/130/139
B102/B101

159300

AUTHORS: Karmin, B. K., Vinitskiy, L. Ye. Epshteyn, V. G.

TITLE: Change of structural inhomogeneity of rubbers in the vulcanization process

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 15, 1961, 602, abstract 15П372 (Sb. "Vulkanizatsiya rezin. izdeliy". Yaroslavl', 1960, 108 - 113)

TEXT: A variation-statistical method was used to evaluate the inhomogeneity of sulfur vulcanizates of НК(NK) and СКМС-30(SKMS-30) with Captax, diphenyl guanidine, Altax, and БТ(BT) sulfonamide. The root-mean-square spread and the coefficient of variability were calculated. The structural inhomogeneity was determined from the decrease in relative elongation that occurs when the temperature is raised from 20 to 100°C. The inhomogeneity increases sharply after the optimum, and decreases with decreasing amount of S and increasing amount of accelerator. Rubbers with diphenyl guanidine are less inhomogeneous than those with thiuram. The structural inhomogeneity of vulcanizates is due to the existence of weakened points in the structure which is

Card 1/2

Change of structural inhomogeneity...

verified by the high inhomogeneity of thick specimens. The increase in inhomogeneity on revulcanization is one of the reasons for the existence of vulcanization optimum. [Abstracter's note: Complete translation.]

Card 2/2

80601

S/138/60/000/01/09/010

15.9300

AUTHORS: Boguslavskiy, D.B., Tikhomirov, B.P., Epshteyn, V.G.,

TITLE: The Problem of Determining the Character of Destruction Taking Place in Rubber-Cord Systems

PERIODICAL: Kauchuk i Rezina, 1960, No. 1, pp. 51 - 53

TEXT: The usual optical-visual methods such as luminescent analyses and microscopic observation of cross cuts of cord strands are apt to give only an approximate idea of the character of foliation. An attempt is made in this article to determine the nature of foliation in rubber-cord systems by successive introduction of finely dispersed oxalate and of the radioactive isotope Sr^{90} with carrier $CaC_2O_4{}^2$ into the impregnation composition and the carcass rubber. The work was performed in accordance with two methods. The first method consisted in treating the cord strands with $Ca(Sr^{90})C_2O_4$ and after determining their radioactivity, applying them to rubber plates. After vulcanization the cords were removed and the rubber samples examined in regard to their radioactivity. The second method consists in introducing prepared oxalate $Ca(Sr^{90})C_2O_4$ into the carcass rubber from which samples 30x100 mm were cut out; impregnated strands of cord without radio-

4

Card 1/2

80601

S/138/60/000/01/09/010

The Problem of Determining the Character of Destruction Taking Place in Rubber-Cord Systems

activity were applied and the samples vulcanized. The cord strands were then removed and examined as to their radioactivity. The application of radioactive isotopes permits the determination of places and the nature of destruction occurring in rubber-cord systems. In case of impregnation of cord with 50-D composition based on SKS-30 latex containing albumin or resorcin-formaldehyde resin destruction usually takes place on the adhesive-rubber interface. With an increase in the content of resorcin-formaldehyde resin in the impregnation composition and in the tensile strength of the films the probability of direct destruction of the adhesive decreases. The application of carboxyl-containing latex for impregnation contributes to reducing the cases of destructions of cohesion character. Films consisting of carboxyl-containing polymers have a high tensile strength which increases with the addition of resorcin-formaldehyde resin. With the simultaneous improvement of adhesion and cohesion properties of the adhesive the zone of destruction shifts in the direction of the carcass rubber. There are 2 diagrams, 3 tables and 5 Soviet references.

ASSOCIATION: Yaroslavskiy shinnyy zavod (Yaroslav Tire Plant)

Card 2/2

29457
S/081/61/000/017/164/166
B117/B110

15.9201

AUTHORS: Morozov, A. D., Epshteyn, V. G., Ognevskiy, L. A., Gracheva, G. N.

TITLE: Properties of combined systems of different rubbers with resins obtained in the condensation of aromatic amines and formaldehyde

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 17, 1961, 596, abstract 17 П 316 (Uch. zap. Yaroslavsk. tekhnol. in-ta, v. 5, 1960, 115 - 125)

TEXT: The properties of combined systems of СКС-30 (SKS-30), СКН -18 (SKN-18) and СКН-26 (SKN-26) and formaldehyde aniline resins obtained by rolling lie between those of rubbers and those of plastics: increased modulus and strength, reduced relative and permanent extension, high hardness with good impact strength, high resistance to gasoline and frost. The SKS-30-vulcanizates with formaldehyde aniline resin are sufficiently temperature stable and resistant to thermal ageing. An increase in the aniline ratio in the resin causes a higher gasoline resistance of

S/081/61/000/014/030/030
B105/B202

AUTHORS: Belorossova A. G., Epshteyn V. G.

TITLE: Complex-phenol-based substances which accelerate the destruction of rubbers

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 14, 1961, 663, abstract 14П347 (Uch. zap. Yaroslavsk. tekhnol. in-ta, 1960, 5, 129-133)

TEXT: In order to explain the effect of complex phenols with tertiary C atom in the side chain on the destruction of rubbers the authors synthesized and identified aryl alkyl phenols (by alkylating phenol by means of styrene) and products of their condensation with acetaldehyde (I) and HCOH (II). In phenol alkylation the authors identified methyl phenyl-p-cresol (III) and 2,4-dimethyl-2,4-diphenyl xylenol (IV). 5 resins were identified in the condensation: resin no. 1: product of the condensation of isopropyl phenol with I, resin no. 2: III with I, resin no. 3: IV with I, resin no. 4: IV with II, resin no. 5: III with II. The authors determined the effect of the resins on the mastication of СКС-30 (SKS-30) (1 part by weight per 100 parts by weight of rubber) in the laboratory

Card 1/2

Complex-phenol-based substances ...

container at 130°C and a pressure of 3 atm. Mastication is accelerated by resins no. 1, no. 2, and IV, it is delayed by the resins with II. Resins no. 1, no. 2 and IV have tertiary C atoms which are connected with two phenol groups. The presence of such atoms in the action of O_2 may lead to the formation of hydrogen peroxides which accelerate the process of oxidizing destruction. [Abstracter's note: Complete translation.]

Card 2/2

EPSHTEYN, V.G.

"Rubber goods for engineering uses" by V.A.Lepetov. Reviewed by V.G.Epshtein. Kauch.i rez. 19 no.6:64 Je '60. (MIRA 13:6)
(Rubber goods) (Lepetov, V.A.)

87918

15.9200 2109, 2209
11.2211

S/138/60/000/008/004/015
A051/A029

AUTHORS: Boguslavskiy, D.B.; Epshteyn, V.G.; Ognevskaya, T.Ye.; Lyapina, L.A.; Lyubeznikov, V.K.

TITLE: The Modification of the Properties of Synthetic Rubbers, Containing Active Functional Groups, Using Resorcin-Formaldehyde Resin in the Latex Stage

PERIODICAL: Kauchuk i Rezina, 1960, No. 8, pp. 13 - 18

TEXT: The strengthening effect of resorcin-formaldehyde resin in synthetic rubbers was studied using the usual processing methods, such as coagulation, rolling and mixing, etc. It has been previously shown that in filling butadiene--styrene rubbers in the latex stage using resorcin-formaldehyde resin, the rubber mixtures produced are satisfactorily processed and the vulcanizates have sufficiently high physico-mechanical properties (Ref. 4). The properties of the filled rubbers depend to a great extent on the amount of resin, the molar ratio of resorcin and formaldehyde and on several colloidal-chemical factors. The rubbers investigated were regulated carboxyl-containing СКС -30-1 (SKS-30-1) butadiene-styrene rubbers with 1.2% methacrylic acid, and 2-methyl-5-vinylpyridine СКМВП-15 (SKMVP-

Card 1/6

87918

S/138/60/000/008/004/015
A051/A029

The Modification of the Properties of Synthetic Rubbers, Containing Active Functional Groups, Using Resorcin-Formaldehyde Resin in the Latex Stage

-15) rubbers. The plasticity according to Carriere was 0.40 - 0.50. The presence of copolymers of active polar substitutes with acidic or basic properties in the molecular chain could affect the condensation process of the thermoreactive resin and thus affect the properties of the rubber-resin mixtures. The process of condensation took 22 - 24 hours at a normal temperature. The effect of the different ratios of the resorcin to the formaldehyde is shown in Figure 1. The optimum molar ratio of the resorcin to the formaldehyde in the strengthening of the methyl-vinylpyridine rubber was found to be 1 : 0.8, and for the butadiene-styrene and carboxyl-containing rubbers, it was found to be within the range of 1 : 1.5 to 1 : : 1.8. Apparently the condensation of the SKMVP-15A rubber upon introducing lacquer resins, to the resol stage is activated on the surface of the globules by the pyridine groups having basic properties. In filling the carboxyl-containing and methyl-vinylpyridine rubbers, vulcanizates can be obtained with a tensile strength of 220 - 280 kg/cm^2 contrary to those of natural and butadiene-styrene rubbers. The tear-resistance of the resin-filled butadiene-styrene rubbers is found to be rather low (25 - 30 kg/cm), contrary to that of the carboxyl-containing

Card 2/6

The Modification of the Properties of Synthetic Rubbers, Containing Active Functional Groups, Using Resorcin-Formaldehyde Resin in the Latex Stage

and methylvinylpyridine rubbers (from 52 - 56 kg/cm). The optimum dosage of the resin would depend on the type of rubber being filled and the chemical nature of its functional groups and molecular chain (Fig. 3). It is assumed that the strengthening effect on rubbers with active functional groups from resorcin-formaldehyde resin is due to both the formation of chain-like structures from resin particles, adsorbed at the surface of the latex globules and by the substantial increase in the interaction between the rubber molecules and the filler particles. It was noted that further improvement of the physico-mechanical properties of the resin-filled rubbers could be accomplished by combining the resorcin-formaldehyde resin with carbon black. The latter also increases the rubber-filler gel. The wear resistance is increased when using two fillers (resin and carbon black). The latter exceed rubber filled only with resin by 12 - 20% according to laboratory findings. The following ratios of the resin and carbon black are assumed by the authors to be the optimum values (in weight parts to 100 weight parts of rubber): for SKS-30A, 15 resin, 15 - 20 carbon black; for SKS - 30 - 1, 10 resin, 10-15 carbon black; for SKMVP, 5 resin, 15-20 carbon black. As to the softener used in all the resin-filled rubbers, the most suitable was found to be pine tar. It is

87918

S/138/60/000/008/004/015
A051/A029

The Modification of the Properties of Synthetic Rubbers, Containing Active Functional Groups, Using Resorcin-Formaldehyde Resin in the Latex Stage

assumed, the increase in physico-mechanical properties caused by resorcin-formaldehyde is due to the formation of additional bonds between the copolymer chains containing active functional groups capable of interaction. The conclusion is drawn that the observed strength of the rubbers under investigation can be used in the production of highly-stable vulcanizates, with elevated elasticity and low heat formation. There are 7 figures, 1 table and 8 references: 5 Soviet, 1 French 2 English.

ASSOCIATION: Yaroslavskiy shinniy zavod (Yaroslavl' Tire Plant)

Card 4/6

87918

S/138/60/000/008/004/015
A051/A029

The Modification of the Properties of Synthetic Rubbers, Containing Active Functional Groups, Using Resorcin-Formaldehyde Resin in the Latex Stage

Figure 1:

Effect of the Molar Ratio of Resorcin and formaldehyde in the Physical-Mechanical Properties of Resin-filled Rubbers.
1 - SKS-30A; 2 - - SKS-30-1; 3 - - SKMVP-15A.

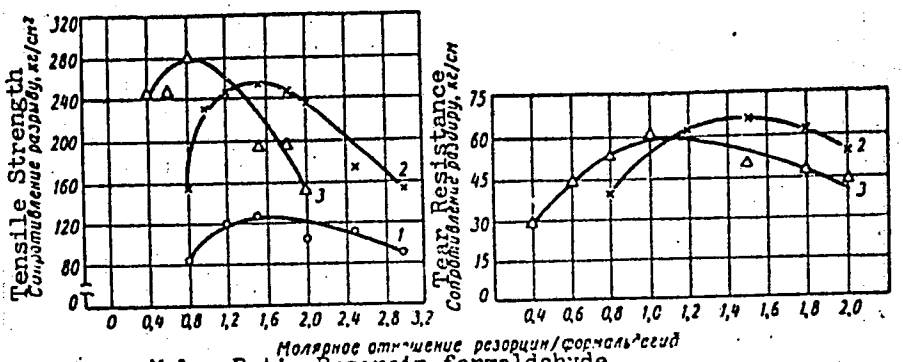

Рис. 1. Влияние молярного отношения резорцина и формальдегида на физико-механические свойства смолонаполненных резин:
1—СКС-30А; 2—СКС-30-1; 3—СКМВП-15А.

Card 5/6

87918

S/138/60/000/008/004/015
A051/A029

The Modification of the Properties of Synthetic Rubbers, Containing Active Functional Groups, Using Resorcin-Formaldehyde Resin in the Latex Stage

Figure 3:

Effect of Dosage of Resorcin-formaldehyde Resin on the Physical--Mechanical Properties of Rubbers

1 - SKS-30A; 2 - - SKS-30-1; 3 - - SKMVP-15A.

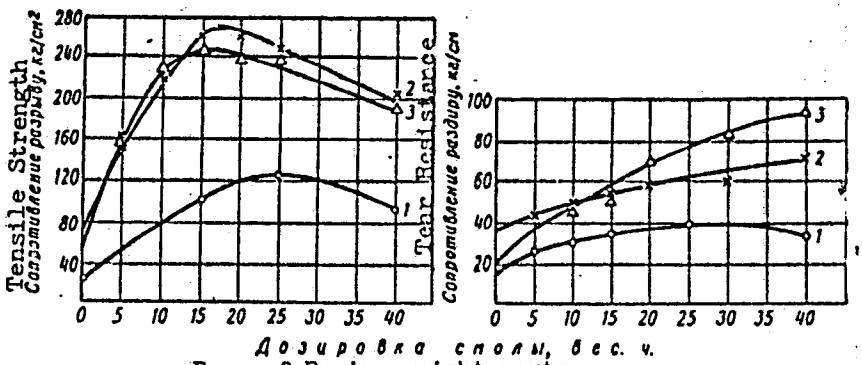

Рис. 3. Влияние дозировки резорцин-формальдегидной смолы на физико-механические свойства резин:
1—СКС-30А; 2—СКС-30-1; 3—СКМВП-15А.

Card 6/6

EPSHTEYN, V.G.

36363
S/081/62/000/005/106/112
B167/B101

15.9201

AUTHORS: Kopylov, Ye. P., Yemel'yanov, D. P., Lazaryants, E. G. Rumyantseva, A. N., Tsaylingol'd, V. L., Epshteyn, V. G.

TITLE: Peculiarities of vulcanizates based on methylvinylpyridine rubber hydrochlorides

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 5, 1962, 644-645, abstract 5P298 (Uch. zap. Yaroslavsk. tekhnol. in-ta, v. 6, 1961, 157 - 162)

TEXT: A study of the co-polymers of butadiene and 2-methyl-5-vinylpyridine in the ratio 85:15 (СКМВП-15А)(SKMVP-15A) and also in combination with styrene in the ratio 85:5:25 (СКС-25-МВП-5А)(SKS-25-MVP-5A) was made. The crumbled vulcanized rubber was immersed in HCl solution (density 1.19) for 1, 2, 4, 12, and 24 hrs, washed with water, and dried 4-5 hrs at 55-60°C. A maximum of 4.3% and ~1% of HCl combines with SKMVP-15A and SKS-25-MVP-5A, respectively, corresponding to one HCl molecule per methylvinylpyridine radical. Mixtures of these polymers are more tacky and show less scorching than mixtures of the original rubbers. On increasing the content of combined HCl the plasticity of the mixtures decreases, but that of the black-

Card 1/2

Peculiarities of vulcanizates...

filled materials based on the SKS-25-MVP-5A salt remains unchanged. The resistance towards rupture of the unfilled and the slightly filled vulcanizates increases with the amount of combined HCl, and reaches 234 kg/cm^2 with an unfilled SKMVP-15A vulcanizate. The tear resistance of unfilled vulcanizates increases with combined HCl content, but their relative extension is little affected. The hardness and heat evolution of the vulcanizates increases, their elasticity drops appreciably (SKMVP-15A) or slightly (SKS-25-MVP-5A); the heat evolution of the latter vulcanizates does not increase; higher combined HCl content also increases the attrition resistance of the black-filled vulcanizates, SKS-25-MVP-5A in particular. The added HCl has no apparent effect on the frost resistance, and increases the adhesive power to metals and the resistance to swelling in gasoline and benzene of SKMVP-15A rubbers. [Abstracter's note: Complete translation.]

Card 2/2

EPSHTEYN, V.G.; VINITSKIY, L.Ye.; BABITSKIY, B.L.

New rubber vulcanization accelerators based on ethanolamines and mercaptobenzothiazole. Izv.vys.ucheb.zav.i khim.tekh. 4 no.5:872-874 '61. (MIRA 14:11)

1. Yaroslavskiy tekhnologicheskiy institut, kafedra tekhnologii reziny.

(Vulcanization) (Ethanol) (Benzothiazole)

S/138/61/000/004/006/006
A057/A129

AUTHOR: Epshteyn, V.G.

TITLE: Scientific and technical conference on the chemistry and technology of raw and vulcanized rubber

PERIODICAL: Kauchuk i rezina, no. 4, 1961, 58-59

TEXT: The All-Union Chemical Society imeni D.I. Mendeleyev and the Central Office of Technical Information of the National Economic Council held jointly the Third Scientific and Technical Conference on the Chemistry and Technology of Raw and Vulcanized Rubber in Yaroslavl' on December 14-16, 1960. Three hundred persons participated and 22 papers were presented. Representatives of the Yaroslavl' plants, scientific and technical institutes read thirteen of these papers. The conference reflected the large volume of scientific work carried out on the chemistry and technology of raw and vulcanized rubber, carried out in the Yaroslavl' economic region. Special stress was laid on the new types of polymers. B.K. Karmin and F.Ye. Kuperman (NIIShP) reported on a number of valuable properties of the new CKA - (SKD) vulcanized rubber. N.L. Sakhnovskiy

S/138/61/000/004/006/006
A051/A129

Scientific and technical ...

(NIIShP) and A.K. Yur'yevaya (Yaroslavl' Tire Plant) reported on the application of vulcanized carboxylic rubbers CK -1-30 (SK) in tread rubbers. The scientists of NIIShP discussed the properties of vulcanized isoprene rubbers. Ye. P. Kopylov, Yaroslavskiy tekhnologicheskiy institut (Yaroslavl' Technological Institute) spoke on the new types of chloride vulcanizates of methylvinylpyridine rubbers. The papers of A.D. Morozov, V.G. Epshteyn and G.N. Gracheva (Yaroslavl' Technological Institute) dealt with the combination of vulcanized rubbers with synthetic resins. S.V. Orekhov (Yaroslavl' Rubber Products Plant and the Yaroslavl' Technological Institute) pointed out that annilinefurfurole (resins impart to the rubbers oil resistance) retain their frost-resistance. They also raise the strength of the rubber-metal adhesion, increase the plasticity of non-vulcanized mixtures without reducing the resistance of the vulcanizates. B.N. Dinzburg, B.A. Safray and N.K. Baramboym reported on the mixing of phenol-formaldehyde resins with vulcanized rubbers. The paper presented by P.A. Skovorodkim, Kh. N. Borodushkina, et al. dealt with the effect of various formulation factors on the wear of tread rubber. Several papers were presented on new accelerators (N.D. Zakharov and A.V. Makarova); on

Card 2/3

S/081/62/000/005/111/112
B168/B101

15.9130

AUTHORS: Babitskiy, B. L., Vinitskiy, L. Ye., Epshteyn, V. G.

TITLE: New vulcanization accelerators based on ethanolamine derivatives

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 5, 1962, 649, abstract 5P328 (Tr. Vseros. n.-i. khim. in-ta prom-sti mestn. podchineniya, no. 10, 1960, 116-127)

TEXT: The production and properties of a number of vulcanization accelerators are described, namely salts of mono- and diethanolamines with mercaptobenzothiazol (I) and acid and neutral salts of these ethanolamines with orthophthalic acid (II). Monoethanolamine salts with I (III) and diethanolamine salts with I (IV) are more effective than I. With III and IV the time taken to attain optimum vulcanization is reduced by 30 % and the rubbers are 50 % stronger than standard rubber with I and are somewhat superior with regard to strength and specific elongation to rubbers with I + diphenylguanidine (V). III gives the rubber a better resistance to heat aging, while compounds with III are less subject to scorching than are

Card 1/2

New vulcanization accelerators...

compounds with a combination of I + V. Accelerators of type II are most effective in conjunction with I. Compounds with II are less subject to scorching, especially in comparison with those with I + V. All the above-mentioned accelerators are very cheap and readily available.
[Abstracter's note: Complete translation.]

Card 2/2

S/081/62/000/005/105/112
B167/B101

15.9201

AUTHORS: Shakh-Paron'yants, A. M., Epshteyn, V. G.

TITLE: Some properties of СКИ(SKI) isoprene rubber vulcanizates

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 5, 1962, 643, abstract 5P288 (Uch. zap. Yaroslavsk. tekhnol. in-ta, v. 6, 1961, 147 - 154)

TEXT: An increase in the degree of vulcanization of SKI (e. g. by increasing the proportion of sulfenamide БТ(BT) accelerator from 1 to 3 % by weight produces an increase in the elastic modulus, a decrease in the relative extension, (to between 500 - 600 %), and a decrease in the tensile strength of the vulcanizates (from 250 to 20 - 25 kg/cm^2), as a result of difficult crystallization in the dense molecular lattice containing numerous sulfur links. The decrease in the strength of SKI rubber, after it has passed through a maximum, is also explained by hindered crystallization and by destruction. SKI and its vulcanizates oxidize more rapidly than natural rubber, and the oxidation is accelerated by a higher alkali content. The most effective antideteriorants for SKI and its vulcanizates are 4010 and

Card 1/2

S/081/62/000/005/105/112
B167/B101

Some properties of СКИ(SKI)...

1;4-diphenylphenylenediamine in conjunction with neozone D. Addition of anisidine to the SKI mixture induces oxidative cross-linking and enhances the modulus of the rubbers. [Abstracter's note: Complete translation.]

Card 2/2

S/081/62/000/005/108/112
B168/B101

15,9201

AUTHORS: Chekanova, A. A., Epshteyn, V. G., Tsaylingol'd, V. L., Nikitina, N. P.

TITLE: The use of resins - copolymers of methyl vinyl pyridine - as active fillers for rubber compounds

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 5, 1962, 647, abstract 5P314 (Uch. zap. Yaroslavsk. tekhnol. in-ta, v. 6, 1961, 101-108)

TEXT: Emulsions of butadiene vinyl pyridine resins containing 60, 70, and 85 % methyl vinyl pyridine (I) were introduced into butadiene/styrene latex CKC-30APK (SKS-30ARK). The compound was coagulated and the coagulum was vulcanized in the presence of sulfur and of accelerators containing no carbon black. In the case of the resin containing 85 % I, sulfur additions of up to 15 parts by weight are required. "Vultexes" - latexes after vulcanization of resins in globules with the aid of sulfur and accelerators - were also obtained. The use of resins in the form of latex or "vultex" increases the moduli and also the tear and breaking

Card 1/2

strength - this latter effect increasing with the content of I. I-resins impart to the vulcanized rubber a higher temperature resistance than do resins with a high styrene content. Temperature resistance increases with the content of I. The I-resin globule is assumed to contain a large number of sulfur links, which reduce the pliability of the chain, even at raised temperatures, and thereby considerably increase the temperature resistance of the vulcanized rubber. [Abstracter's note: Complete translation.]

BELOROSSOVA, A.G.; TSAYLINGOL'D, T.A.; EPSHTEYN, V.G.; ANGERT, L.G.

Derivatives of phenyl-beta-naphtylamine as stabilizers of caoutchouk and rubber. Khim. i khim. tekh. 1:123-130 '62.
(MIRA 17:2)

POLYAK, M.A.; EPSHTEYN, V.G.; GLAVINA, V.S.; BELAVINA, N.P.

Investigating the possibility of using the oxalate of triethanolamine as vulcanization accelerator. Khim. i khim. tekh. 1:133-138 '62. (MIRA 17:2)

ACCESSION NR: AT4029927 S/3087/62/001/000/0147/0153

AUTHOR: Epshteyn, V. G.; Novina, K. P.

TITLE: Properties of rubber mixtures and vulcanizers containing polyethylene

SOURCE: Yaroslavl'. Tekhnologicheskiy institut. Khimiya i khimicheskaya tekhnologiya, vol. 1, 1962, 147-153

TOPIC TAGS: rubber mixture, vulcanizer, vulcanization, polyethylene, resin, butadiene, styrene

ABSTRACT: The authors tested the action of polyethylene manufactured by Soviet industry in rubber mixtures. Two types of polyethylene were used; that produced at low pressure and at high pressure. The results of the testing of the two types on various types of rubber are presented in tables. In each instance, a decrease of elasticity accompanied a strengthening of vulcanizers of various caoutchouc by both types of polyethylene. Growth of residual lengthening, an increase of the modulus of internal friction, a relaxation increase, and an increase of a greater fall of moduli upon repeated deformations were observed. This indicated that the strength in rubber with polyethylene was created because of the forces of intermolecular attraction which increased the internal friction in the vulcanizers during deforma-

Card 1/2

ACCESSION NR: AT4029927

tion. Introduction of low-pressure polyethylene in rubber mixtures, especially based on butadiene-styrene caoutchouc can have great practical application. Firstly, polyethylene can serve to produce solid high module mixtures on the artificial leather type and, secondly, natural rubber polyethylene can be used for decreasing the shrinkage in any production mixtures. Orig. art. has: 4 tables and 1 figure.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 29Apr64 ENCL: 00

SUB CODE: CH NO REF SOV: 002 OTHER: 001

Card 2/2

ACCESSION NR: AT4029928 S/3087/62/001/000/0155/0158

AUTHOR: Polyak, M. A.; Epshteyn, V. G.; Lazareva, L. A.

TITLE: The effect of some resins on the gas permeability of rubber

SOURCE: Yaroslavl'. Tekhnologicheskiy institut. Khimiya i khimicheskaya tekhnologiya, vol. 1, 1962, 155-158

TOPIC TAGS: gas permeability, resin, rubber, natural rubber, butadiene, styrene, caoutchouc, BSS-85, resin, indene-coumarone resin, Yarrezina-B resin, SKS-30 synthetic caoutchouc

ABSTRACT: The authors studied the nitrogen permeability of rubber determined on an instrument constructed by the Yaroslavskiy shinnyy zavod (Yaroslavl tire works); the effect of different quantities of ingredients on the nitrogen permeability of the various types of rubber are presented in graphs. The effect of BSS-85, indene-coumarone and Yarrezina-B resins was tested on the gas permeability of rubber based on natural and synthetic (SKS-30) caoutchouc. It was found that indene-coumarone most effectively lowers the gas permeability of rubber based on natural caoutchouc and the butadiene styrene resin BSS-85 was the most effective for rubber based on SKS-30 caoutchouc. The use of BSS-85 was recommended in the makeup of innertube

Card 1/2

ACCESSION NR: AP4029928

mixtures based on SKS-30 and indene-coumarone resins in rubber -- for the air tight layer based on natural caoutchouc. Orig. art. has: 2 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 29Apr64 ENCL: 00

SUB CODE: CH NO REF SOV: 004 OTHER: 002

Card 2/2

ACCESSION NR: AT4029931 S/3087/62/001/000/0183/0188

AUTHOR: Cherny*kh, Z.V.; Epshteyn, V.G.

TITLE: The effect of vulcanization on the reaction of carbon black with caoutchouc

SOURCE: Yaroslavl'. Tekhnologicheskiy institut. Khimiya i khimicheskaya tekhnologiya, v. 1, 1962, 183-188

TOPIC TAGS: vulcanization, carbon black, caoutchouc, polymer, deformation,

ABSTRACT: The authors state that the problem of the effect of the valent bonds between polymer molecules formed during vulcanization on the physical chemical reaction of caoutchouc with carbon black has not been brought to light in literature. The authors evaluated this physical-chemical reaction as to the value of the fall of moduli during repeated deformations or heating; i.e. as to the non-equilibrium portion of the modulus. The results are presented in tables and graphs. It was shown that a fall of moduli of the carbon black vulcanized rubber caused by repeated deformation, as well as by a temperature increase, depends on the degree of vulcanization, increasing with the rise of the latter. The nonequilibrium portion of the deformation rises with the increase of the degree of vulcanization.

Card 1/2

ACCESSION NR: AT4029931

The values of the moduli of repeated stretching, which characterized the number of chemical stable bonds, are nearer to one another at various degrees of vulcanization than the corresponding values of moduli of the first stretch. Orig. art. has: 2 figures and 3 tables.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 29Apr64 ENCL: 00

SUB CODE: CH NO REF SOV: 009 OTHER: 005

Card 2/2

ACCESSION NR: AT4029924 S/3067/62/001/000/0123/0131

AUTHOR: Belorossova, A. G.; Tsaylingol'd, T. A.; Epshteyn, V. G.; Angert, L. G.

TITLE: Phenyl-β-naphthylamine derivatives as caoutchouc and rubber stabilizers

SOURCE: Yaroslavl'. Tekhnologicheskiy institut. Khimiya i khimicheskaya tekhnologiya, vol. 1 (8), 1962, 123-131

TOPIC TAGS: caoutchouc, rubber, phenyl, alkylation, phenyl derivative, amine, neozone-D,

ABSTRACT: The authors obtained alkylated derivatives of phenyl-β-naphthylamine which contain different quantities of carbon atoms in the alkyl group. A description of various derivatives is given. Secondary amine derivatives of phenyl-β-naphthylamine were obtained and identified; part of them have not been described in literature. The obtained products were tested as anti-oxidants and age resistors of caoutchouc and rubbers. It was shown that the tested products were anti-oxidants. In their protective effect against rubber aging, they were quite close to one another and similar to neozone-D. The best results, as an oxidation inhibitor and a substance which prevents heat aging, were shown by isopropyl-phenyl-β-naphthylamine which exceeded the currently used neozone-D in the indicated properties. Orig. art.

Card 1/2

ACCESSION NR: AT4029924

has: 3 figures.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 29Apr64 ENCL: 00

SUB CODE: CH NO REF SOV: 003 OTHER: 001

Card 2/2

ACCESSION NR: AT4029925 S/3087/62/001/000/0133/0138

AUTHOR: Polyak, M.A.; Epshteyn, V.G.; Glavina, V.S.; Bělavina, N.P.

TITLE: The study of the possibility of using tri-ethanolamine oxalate as a vulcanization accelerator

SOURCE: Yaroslavl'. Tekhnologicheskiy institut. Khimiya i khimicheskaya tekhnologiya, vol.1, 1962, 133-138, N~ P

TOPIC TAGS: triethanolamine oxalate, vulcanization, vulcanization accelerator, nairit, neoprene

ABSTRACT: The authors sought a new type of accelerator based on inexpensive, widely available raw material having a great induction period of action and which is suitable for vulcanization of different types of caoutchouc, including Nairit (neoprene). They studied the effect of tri-ethanolamine oxalate on a vulcanization of rubber mixtures based on natural and polychloroprene caoutchouc. It was shown that tri-ethanolamine oxalate accelerates the vulcanization of natural caoutchouc, assuring an increase in the modulus index of 300% and a pressure resistance of a rubber comparable to the accelerator mercaptobenzothiazole. The advantages of tri-ethanolamine oxalate were especially evident at an increased (161°C) vulcanization tem-

Card 1/2

ACCESSION NR: AT4029925

perature. The kinetic curve of the sulfur bonding in the presence of tri-ethanolamine oxalate has, approximately, an s-shape character; i.e., in the initial stage of vulcanization sulfur addition is restrained. Tri-ethanolamine oxalate in a dose of 0.5 by weight in mixtures, based on Nairit, increased the resistance of the mixtures to subvulcanization, and with a content of 2.0 by weight, it accelerated vulcanization to which the dosage of the metal oxides can be lower. Tri-ethanolamine oxalate is recommended as an accelerator of vulcanization for tire carcases mixtures based on natural caoutchouc. Orig. art. has: 2 tables and 2 figures.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 29Apr64 ENCL: 00

SUB CODE: CH NO REF SOV: 010 OTHER: 002

Card 2/2

ACCESSION NR: AT4029926 S/3087/62/001/000/0139/0145

AUTHOR: Chekanova, A. A.; Epshteyn, V. G.; Murasheva, L. A.

TITLE: The use of butadiene and monochlorostyrene resins -- copolymers as active fillers of rubber mixtures

SOURCE: Yaroslavl'. Tekhnologicheskiy institut. Khimiya i khimicheskaya tekhnologiya, vol. 1, 1962, 139-145

TOPIC TAGS: butadiene, monochlorostyrene, resin, copolymer, rubber mixture, active filler, vulcanization, caoutchouc, emulsion polymerization, BSS-85 resin

ABSTRACT: The authors investigated the increase of temperature resistance of vulcanizers by studying resins -- copolymers of butadiene with monochlorostyrene. The results of the investigation and the properties of various resins and copolymers are presented in tables and graphs. Butadiene chlorostyrene resins with different monomer contents were synthesized by the emulsion polymerization method. The kinetic curves of polymerization were recorded; it is shown that by increasing chlorostyrene in the mixture, the velocity of polymerization increases. The strengthening effect of the obtained resin in the rubber mixtures based on SKS-30AK caoutchouc was studied and compared to the BSS-85 resin. It was shown that the optimal butadiene

Card 1/2

ACCESSION NR: AT4029926

chlorostyrene resin content was 50 parts by wt/100 parts by weight of caoutchouc. The vulcanizers which contained butadiene chlorostyrene resin were characterized by high moduli, resistant to wear and tear. Butadiene chlorostyrene resins increase the temperature resistance of vulcanizers which is caused by the existence of strong intermolecular reaction in the resin. Orig. art. has: 2 tables and 2 figures

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 29Apr64 ENCL: 00

SUB CODE: CH NO REF SOV: 002 OTHER: 000

BEKIN, N.G.; EPSHTEYN, V.G.; Prinimal uchastiye YEGOROV, V.S., inzh.

Investigating the dependence of drive power and screw pressure on the thrust bearing on the technological parameters of the rubber compound injection. Khim. i khim. tekh. 1:371-384 '62. (MIRA 17:2)

S/138/62/000/010/002/008
A051/A126

AUTHORS: Kopylov, Ye.P., Epshteyn, V.G., Lazaryants, E.G., Tsaylingol'd, V.L

TITLE: Production of highly-resistant vulcanizates based on complex compounds of methylvinylpyridine rubbers and metal salts

PERIODICAL: Kauchuk i rezina, no. 10, 1962, 19 - 26

TEXT: The authors discuss the production of copolymers containing active functional groups in the molecular chains: carboxylic, pyridine, aldehyde, etc. The vulcanizates produced from these copolymers have new properties, characteristic of the products from reaction of functional groups with other components of the rubber mix. Reference is made to previous studies on this subject and to work conducted by the authors on the features of complex compounds of СКМВП (SKMVP) and the salts of methylvinylpyridine rubbers and acids. The reaction of SKMVP complex-formation is noted only with salts that form complex formations with the individual pyridine and its homologues. The properties of the produced vulcanizates are explained only by the presence of an inherent special vulcanizing structure - that of coordinated transverse bonds. The high tear-resistance

Card 1/2

noted in non-filled vulcanizates with coordinated bonds is determined by the mobility of the transverse bonds in the polymer complexes. Experimental data showed that the highest tensile properties of the rubbers are reached when zinc chloride is used with the simultaneous introduction of magnesium chloride and zinc oxide into the rubber. It is concluded that functional groups of methylvinylpyridine rubbers form complex compounds with certain metal halogenides and salts with acids. The non-filled and the carbon-black vulcanizates with coordinated bonds have high tensile properties, including a high wear-resistance. The elevated tensile strength in the presence of coordinated bonds in the vulcanizates is explained by the mobility of these bonds and the ability of them to regroup during deformation. There are 6 figures and 3 tables.

ASSOCIATION: Nauchno-issledovatel'skiy institut monomerov dlya sinteticheskogo kauchuka i Yaroslavskiy tekhnologicheskiy institut (Scientific Research Institute of Monomers for Synthetic Rubber and Yaroslavl' Institute of Technology)

MAKAROV, M.M., EPSHTEYN, V.G., MAKAROV, V.M.

The new rubber recovery method using a heated air jet.

Report submitted for the 4th Scientific research conference on the Chemistry and technology of synthetic and natural rubber Yaroslavl, 1962

NOVINA, K.P., RUMYANTSEVA, Z.M., FARBEROVA, M.I., EPSHTEYN, V.G.

Rubber transformation with an aldehyde group in the rubber.

Report submitted for the 4th Scientific research conference on the chemistry and technology of synthetic and natural rubber. Yaroslavl, 1962

ZAKHARIN, O.A., POLYAK, M.A., EPSHTEYN, V.G., LISOGURSKIY, I.Z.

The possibilities of intensifying the process of rubber mix preparation in the RS-2 rubber mixers.

Report submitted for the 4th Scientific research conference on the Chemistry and technology of synthetic and natural rubber. Yaroslavl, 1962

POLYAK, M.A.; EPSHTEYN, V.G.; LISOGURSKIY, I.Z.; YUR'YEVA, A.K.; ZAKHARKIN, O.A.; KOLDAYEVA, T.N.; Prinimali uchastiye: SKOVORODKIN, P.A.; GAVSHINOV, I.I.; MINEYEV, A.N.; SUR'YANINOVA, M.N.; BORISOV, N.V.

Studying the process of rubber mixture preparation in 20 r.p.m. rubber mixers. Kauch.i rez. 22 no.4:5-10 Ap '63. (MIRA 16:6)

1. Yaroslavskiy shinnyy zavod i Yaroslavskiy tekhnologicheskiy institut.

(Rubber) (Rubber machinery)

L 18074-63 EPR/EWP(j)/EPF(c)/EWT(m)/BDS AFFTC/ASD/ESD-3 Ps-4/Pc-4/Pr-4
RM/WW/MAY
ACCESSION NR: AP3004252 S/0138/63/000/007/0009/0013

AUTHORS: Kopy*lov, Ye. P.; Epshteyn, V. G.; Lazaryants, E. G.; Tsaylingol'd, V. L.; Mantseva, L. N.

TITLE: Properties of vulcanizates of methylvinylpyridine rubbers with coordination bonds

SOURCE: Kauchuk i rezina, no. 7, 1963, 9-13

TOPIC TAGS: vulcanizate, functional group, complex compound, reinforcing filler, carbon black, coordination bond, complex forming agent, organic acid

ABSTRACT: Tests are reported on vulcanizates from rubbers with coordination bonds formed by a reaction of methylvinylpyridine rubber (MVPR) with the chlorides of zinc, cadmium, and tin, or zinc oxide. The plasticity of vulcanized rubber containing up to 50% carbon black showed a marked linear decrease when up to 5% zinc chloride was included in the formula, but its tensile strength, resistance to abrasion, and its modulus at 300% elongation went up. Similar observations were made with additions of tin chloride and cadmium chloride, as well as Fillblack O or calcium carbonate. It was concluded that incorporation into MVPR of zinc chloride and the like resulted in formation of specific coordination bonds, substan-

Card 1/2

L 18074-63
ACCESSION NR: AP3004252 2

tiated by the fact that vulvanized rubbers of equal tensile strength were prepared from MVPR stock containing either 50% carbon black or 40% carbon black plus 1% zinc chloride. The investigation also covered the effect of metacrylic and benzoic acids on the properties of unfilled vulcanized rubbers obtained by polymerization of MVPR in the presence of 10% zinc chloride. The addition of 10% of one of these acids produced a transparent rubber possessing a triple tensile strength (as compared with the control) without affecting its plasticity. Orig. art. has: 4 charts and 3 tables.

ASSOCIATION: Naukhno-issledovatel'skiy institut monomerov dlya SK, Yaroslavskiy tekhnologicheskiy institut (Scientific Research Institute of Monomers for Synthetic Rubber, Yaroslavl' Technical Institute)

SUBMITTED:	00	DATE ACQ:	21Aug63	ENCL:	00
SUB CODE:	MA	NO REF SOV:	005	OTHER:	001

Card 2/2

ACCESSION NR: AP4038909 S/0138/64/000/005/0053/0055

AUTHORS: Vasil'yev, G. Ye.; Yemel'yanov, D. P.; Epshteyn, V. G.; Polyak, M. A.; Zakharkin, O. A.; Yartsev, V. A.; Golkin, V. B.

TITLE: Improving the quality of rubber compounds by means of carbon black master batches

SOURCE: Kauchuk i rezina, no. 5, 1964, 53-55

TOPIC TAGS: carbon black, SKS30ARKM rubber base, SKS30ARKM carbon black, gas furnace carbon black, furnace PM 70 carbon black, vulcanization index

ABSTRACT: This investigation involved three types of master batches: 1) a low-modular protector batch on SKS-30ARKM rubber base, containing (per 100 g rubber) 40 g channel carbon black and 20 g gas furnace carbon black; 2) a carcass batch on SKS-30ARK-15 and natural rubber base (in a 90:10 ratio), containing 40 g gas furnace carbon black; 3) a protector batch on SKS-30ARKM-15 rubber base, containing 50 g PM-70 carbon black. The batches were prepared in a laboratory mixer. Their discharge temperature was within the 160-175C range. They were rolled and stored for 24 hours before being incorporated into a base mix. The tests for the physico-mechanical properties of the vulcanizates of rubber compounds prepared with these carbon black-rubber mixtures proved their superiority to the controls of the same

Card 1/2

ACCESSION NR: AP4038909

composition but prepared under standard procedures. The laboratory data were checked at the Yaroslavl' Tire Plant under factory conditions. Orig. art. has: 2 tables.

ASSOCIATION: Yaroslavskiy tekhnologicheskiy institut (Yaroslavl' Technological Institute); Bakinskiy shinnyy zavod (Baku Tire Plant); Yaroslavskiy shinnyy zavod (Yaroslavl' Tire Plant)

SUBMITTED: 00 DATE ACQ: 05Jun64 ENCL: 00

SUB CODE: MT NO REF SOV: 003 OTHER: 005

Card 2/2

ACCESSION NR: AP4042337 S/0138/64/000/007/0007/0010

AUTHOR: Rumyantseva, Z. M., Golitsina, A. A., Farberov, M. A., Epshteyn, V. G., Lazaryants, E. G., Yemel'yanov, D. P., Kosmodem'yanskiy, L. V.

TITLE: Synthesis and use of butadiene methacrolein latexes

SOURCE: Kauchuk i rezina, no. 7, 1964, 7-10

TOPIC TAGS: tire manufacture, tire cord saturation compound, saturated cord bond strength, latex containing saturation compound, latex SKMA-3, butadiene methacrolein latex, aldehyde group content, polymerization process, latex synthesis, rubber SKS-30 AM, rubber NK, synthetic rubber, SBR rubber

ABSTRACT: Latexes were synthesized by copolymerization of butadiene and methacrolein at 5C in acid (pH 2.5-3.0) and alkaline (pH 10.0-10.5) media, with methacrolein in the initial emulsion varying from 1 to 30 parts by weight (recipes given). Conversion levels of 70% were attained and the kinetics of the process are described in detail. Compounds of the synthesized latexes with resorcinol-formaldehyde (RF) or glycol-resorcinol formaldehyde (FR-12) resins (12 parts by weight of resin per 100 parts of polymer) were used to saturate tire cords. The cords were then tested by multiple deformation, static peeling and N methods for the strength of their bond to resins from NK, SKB and SKS-30

Card 1/2

ACCESSION NR: AP4042337

AM rubbers. It was found that bond strength depends on the content of aldehyde groups in the latex and was best for a monomer mixture with 20% methacrolein by weight. Polymerization at 5C, a conversion level of 70%, Defo hardness levels of 1500 to 3000 g and the use of a rosin soap as an emulsifier promoted bond strength. Comparative evaluation of the synthesized latex, named SKMA-3, indicated it to be superior in bond strength over compounds based on carboxyl containing and vinyl pyridine latexes. Orig. art. has: 4 tables and 2 graphs.

ASSOCIATION: Nauchno-issledovatel'skiy institut monomerov dlya sinteticheskogo kauchuka (Scientific Research Institute for Synthetic Rubber Monomers); Yaroslavskiy tekhnologicheskiy institut (Yaroslav Technological Institute); Yaroslavskiy shinny*y zavod (Yaroslav Tire Factory)

SUBMITTED: 00

ENCL: 00

SUB CODE: MT

NO REF SOV: 010

OTHER: 003

Card 2/2

VASIL'YEV, G.Ya.; YEMEL'YANOV, D.P.; EPSHTEYN, V.G.; POLYAK, M.A.; ZAKHARKIN, O.A.; YARTSEV, V.A.; GULKIN, V.B.

Improving the quality of rubber compounds by using carbon black master batches. Kauch. i rez. 23 no.5:53-55 My '64. (MIRA 17:9)

1. Yaroslavskiy tekhnologicheskiy institut, Bakinskiy shinnyy zavod i Yaroslavskiy shinnyy zavod.

YASHUNSKAYA, F.I.; NAZAROVA, M.V.; EPSHTEYN, V.G.; POLYAK, M.A.

In the D.I.Mendeleev All-Union Chemical Society. Kauch. i rez. 23 no.12:50-52 D '64. (MIRA 18:2)

L 40306-65 EWT(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4 RM
ACCESSION NR: AP5008378 S/0190/65/007/003/0523/0530

AUTHORS: Kopylov, Ye. P.; Lazaryants, E. G.; Epshteyn, V. G.

TITLE: Nature of the intermolecular bonds arising in the structuration of carboxyl-bearing rubber by monobasic amines and univalent and divalent metals

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 3, 1965, 523-530

TOPIC TAGS: intermolecular bond, crosslinked copolymer, rubber, amine, vulcanization, methacrylic acid, styrene, vinyl

ABSTRACT: The authors used as a base the triple copolymers of divinyl, styrene, and methacrylic acid containing 1.25% combined methacrylic acid. The amines were [illegible] at 80-90C. Ammonia was introduced [illegible] in a vacuum at 60-65C. The mechanical [illegible] was found that strong bases among monobasic [illegible] groups. Sodium hydroxide [illegible]

vulcanizing agent than the amines. The authors suggest that when carboxyl-bearing rubber is vulcanized by oxides, hydroxides, or salts of bivalent metals, the crosslinkages are mainly neutral salts or basic salts linked together by hydrogen bonds. One of the characteristic features of pure-gum rubber from carboxyl-bearing

[illegible] vulcanizates obtained from different [illegible]

ASSOCIATION: Nauchno-issledovatel'skiy institut monomerov dlya sinteticheskogo

EPSHTEYN, V.G.; POLYAK, M.A.

Book reviews and bibliography. Kauch. i rez. 24 no.8:61 '65.
(MIRA 18:10)

L 46172-66 EWT(m)/EWP(j) IJP(c) DJ/RM

ACC NR: AP6021204 (A) SOURCE CODE: UR/0138/66/000/003/0016/0018

AUTHOR: Epshteyn, V. G.; Vasil'yev, G. Ya.; Serov, I. A.; Kurakin, K. A.; Lyapina, L. A.; Polyak, M. A.

37
B

ORG: Yaroslavl Technological Institute (Yaroslavskiy tekhnologicheskiy institut)

TITLE: New type of softener with an aromatic base

SOURCE: Kauchuk i rezina, no. 3, 1966, 16-18

TOPIC TAGS: rubber chemical, petroleum product, plasticizer

ABSTRACT: In order to broaden the source of raw materials for the rubber industry, an extract named "azaroplast" (Azerbaydzhan aromatic plasticizer), obtained from the furfural purification of lubricating oils of Baku crudes, was tested as a softener. Azaroplast was tested in comparison with other commonly used softeners in standard mixes based on NK natural rubber and butadiene-styrene SKS-30ARK rubber and in a tread mix consisting of 70% SKS-30ARK and 30% NK. The tests showed azaroplast to surpass the other softeners in plasticizing effect. The vulcanization rate of mixes containing azaroplast was practically the same as that of mixes with the other softeners. Vulcanizates of standard mixes based on NK and SKS-30ARK and containing azaroplast had increased strength characteristics. Replacement of mazut with azaroplast in tread mixes will permit a considerable increase in the extrusion rate and produce higher strength

Card 1/2 UDC: 678.049.37.004.12

L 46172-66

ACC NR: AP6021204 O

characteristics. Orig. art. has: 3 figures and 2 tables.

SUB CODE: 11/ SUBM DATE: 07Oct64/ ORIG REF: 004/ OTH REF: 002

Card 2/2

L 47175-66 EWT(m)/EWP(j)/T/EWP(v) IJP(c) WW/RM

ACC NR: AP6032177 (N) SOURCE CODE: UR/0069/66/028/005/0675/0677

35
33
B

AUTHOR: Kopylov, Ye. P.; Lazaryants, E. G.; Epshteyn, V. G.

ORG: Scientific Research Institute of Monomers for Synthetic Rubber (Nauchno-issledovatel'skiy institut monomerov dlya sinteticheskogo kauchuka); Yaroslavl' Technological Institute (Yaroslavskiy tekhnologicheskiy institut)

TITLE: Effect of labile bonds on the adhesive properties of rubber mixtures based on pyridine and carboxyl-containing resins

SOURCE: Kolloidnyy zhurnal, v. 28, no. 5, 1966, 675-677

TOPIC TAGS: rubber adhesive property, synthetic resin, bond formation effect, RUBBER, ADHESIVE BONDING, PYRIDINE

ABSTRACT: To determine the effect of labile hydrogen bonds on the adhesive properties of rubber compositions in the contact zone, mixtures containing rubber 100, Rubrax 5, stearin 2, ZnO 5, and channel black 50 parts were prepared and pressed for 20 min at 55C between aluminum foils to form thin (~4 mm) plates. After 2 and 24 hr standing periods, strips (cut out from the plates) were pressed together for 15 sec under 1 kg pressure and then separated using 300 g weights. The adhesion was indicated by the time of complete separation of the plates. Adhesion of the mixtures varied depending on the rubber used and on the substitution of the other components of the initial mixture. Addition of eight parts of rubresine (a condensation product of p-nonylphenol and formaldehyde) to the compositions containing SKMVP-15ARK rubber (a copoly-

Card 1/2 UDC: 541.183:541.64

L 47175-66

ACC NR: AP6032177 2

mer of 1,3-butadiene and 2-methyl-5-vinylpyridine with 85:15 proportion in the initial mixture) increased the adhesion from 1 min (without rubresine) to 8 min for complete separation. This is attributed to the formation of hydrogen bonds between the phenol and pyridine groups, since the phenol groups are weak acids and the pyridine groups are weak bases. Rubber specimens based on the carboxyl-containing resin SKS-30-1 have higher adhesion to each other than that of the pyridine-based rubber SKS-25-MVP-5ARK (copolymer of 1,3-butadiene, styrene, and 2-methyl-5-vinylpyridine in proportion of 70:25:5). The adhesion of SKS-30-1 to SKS-25-MVP-5ARK was about the same as to SKS-30-1 itself. The increased adhesion of the SKS-30-1 resin is also attributed to the formation of labile bonds. The adhesion of rubbers increased with increasing content of methylvinylpyridine. In all cases, rubbers containing the alkaline lamp black Fillblack O (HAF) have lower adhesion than those with channel black (with acid properties). This is attributed to the higher number of OH groups in the channel black than in the lamp black. The OH groups on the carbon black surface from labile bonds with the pyridine groups of the rubber. Orig. art. has: 2 tables. [PS]

SUB CODE: 07/ SUBM DATE: 11Jun65/ ORIG REF: 005/ OTH REF: 004/ ATD PRESS: 5090

Card 2/2 blg

ACC NR: AP7000911 (A) SOURCE CODE: UR/0138/66/000/012/0011/0013

AUTHOR: Koldunovich, Ye. B.; Epshteyn, V. G.; Zakharov, N. D.; Polyak, M. A.; Orekhov, S. V.; Murashova, L. A.; Dokiyenko, A. K.

ORG: Yaroslavl Technological Institute (Yaroslavskiy tekhnologicheskiy institut)

TITLE: Use of an SKD rubber-Nairit combination in the manufacture of commercial rubber products

SOURCE: Kauchuk i rezina, no. 12, 1966, 11-13

TOPIC TAGS: butadiene rubber, chloroprene rubber, synthetic rubber

ABSTRACT: The possibility of using combinations of cis-1,4-butadiene rubber (SKD) with Nairit (chloroprene rubber) in the production of commercial rubber products was investigated by introducing SKD into Nairit-base mixtures for V-belts, compression layers of V-belts, and rubber mixtures to be used for injection molding. SKD was found to impart a satisfactory moldability, improve the calenderability, and markedly decrease the adhesiveness of the mixtures. Nairit vulcanizates combined with SKD have a high ozone resistance. SKD lowers the brittleness temperature of the vulcanizates, substantially decreases their residual compressive strain, and lowers the heat production. V-belts prepared by using SKD in the compression layer were found to have longer service lives than ordinary mass-produced V-belts. Orig. art. has: 2 tables.

SUB CODE: 11/ SUBM DATE: 10Jun66/ ORIG REF: 001/ OTH REF: 004

Card 1/1 UDC: 678.762.2+678.763.2):678.06:62.002.2

ACC NR: AP6037031 SOURCE CODE: UR/0069/66/028/006/0900/0903

AUTHOR: Chernykh, Z. V.; Epshteyn, V. G.; Tikhomirov, B. P.

ORG: Yaroslavl Technological Institute (Yaroslavskiy tekhnologicheskiy institut)

TITLE: Effect of chemical bonds between rubber and the filler on the strengthening of rubber

SOURCE: Kolloidnyy zhurnal, v. 28, no. 6, 1966, 900-903

TOPIC TAGS: chemical bonding, ~~rubber~~ filler, rubber, ~~rubber strengthening~~, carbon black, filler, vulcanization

ABSTRACT: An investigation was made of the reinforcement of rubber having functional groups of methylvinylpyridine and carboxyl rubber by acid channel and basic active furnace carbon black. A noticeable decrease in the diffusion coefficient of radioactive sulfur in rubber and carbon black mixtures takes place by combining the rubber with the basic functional groups and acid carbon black. The formation of ionic type chemical bonds between rubber and carbon black, in the case of combining the carboxyl rubber with basic active furnace carbon black or methyl-

Card 1/2 UDC: 541.18.02:541.64

ACC NR: AP6037031

vinylpyridine rubber with the acid channel black, does not considerably affect the value of the strength of the vulcanized rubbers at normal and increased temperatures. Orig. art. has: 1 figure and 2 tables. [Authors' abstract] [NT]

SUB CODE: 11/SUBM DATE: 02Jun65/ORIG REF: 003/OTH REF: 003/

2/2

ACC NR: AP7008174 SOURCE CODE: UR/0138/67/000/001/0013/0014

AUTHOR: Epshteyn, V. G.; Zakharkin, O. A.; Polyak, M. A.; Yukhnovich, S. G.

ORG: Yaroslavl Institute of Technology (Yaroslavskiy tekhnologicheskiy institut)

TITLE: Effect of additions of SKD-10 liquid polymer on the technological properties of compositions made with 100 percent of synthetic butadiene rubber

SOURCE: Kauchuk i rezina, no. 1, 1967, 13-14

TOPIC TAGS: synthetic rubber, butadiene rubber, polymer, vulcanized rubber, technical property/SKD 10 polymer

ABSTRACT: A method is proposed for improving the technological properties of compositions made with carboxylated butadiene rubber by introducing SKD-10 liquid polymer. The introduction of liquid polymer does not cause a deterioration of the physicomechanical characteristics of vulcanized rubber. Orig. art. has: 2 figures and 2 tables. [NT]

SUB CODE: 11/SUBM DATE: 11Jul66/ORIG REF: 003/

Card 1/1 UDC: 678.762.2:678.062.004.12

AKUSHSKIY, I.Ya., kandidat fiziko-matematicheskikh nauk; EPSHTEYN, V.L., inzhener.

Mechanizing the estimation of mineral resources. Gor.zhur. no.6: 6-9 Je '56. (MLRA 9:8)

1. Stal'proyekt.
(Mines and mineral resources--Statistics)
(Calculating machines)

AUTHOR: Epshteyn, V.L. SOV/133-58-7-13/27

TITLE: A Computer for Automatic Control of Shearing Rolled Products (Vychislitel'naya mashina dlya upravleniya raskroyem prokata)

PERIODICAL: Stal', 1958, Nr 7, pp 622 - 628 (USSR)

ABSTRACT: Investigation of the rolling process in a 630/450 mm continuous mill resulted in the development of automatic control of the shearing process using a digital computer, the function of which is based on the theoretical weight of the rolled products. Figure 2 shows the block schematics of the proposed, automatic control. The selected method of measurement of the input parameters as well as the correctness of the derived calculating formulae were verified experimentally by means of specially designed automatic recording equipment since, at the relatively high rolling speeds, non-automatic recording proved impracticable. During the experiments, this automatic recording equipment substituted the proposed computer. The results are tabulated. The parameters of rolling were obtained for about 1 000 ingots. The graph, Figure 4, shows the distribution of errors in calculating the time of the metal leaving the 450 mill by means of the proposed

A Computer for Automatic Control of Shearing Rolled Products

formulae for sections with transverse dimensions of 58, 66, 78 and 97 mm. The following conclusions are arrived at: 1) The use of computers enables reducing waste caused by shearing if the shearing process is continuously and automatically controlled by means of a computer. 2) For designing correctly the special computer to control this process, it is necessary first to formulate accurately the mathematical problem and to determine the most reliable methods of measuring the input parameters. 3) As a result of the analysis carried out by the author, it was established that for the rolling mill 450 MMK, it is possible to apply a contactless time-impulse metering circuit, using as external probes ordinary, metallurgical photo heads. For determining the length of the strip to be cut (expressed in time), it is advisable to apply a simple additive formula which is based on the law of constancy of the volumes per sec, taking into consideration the influence of transient regimes at the instants of entry and exit of the metal from the rolling stand. 4) The satisfactory agreement between the calculated data

A Computer for Automatic Control of Shearing Rolled Products

and the data measured during the experiments confirms the correctness of the fundamental theoretical assumptions and permits achieving optimum shearing action by means of a relatively simple computer, designed to control the process and based on the theoretical weight of the rolled product.
There are 3 figures, 4 tables and 2 Soviet references

ASSOCIATION: Stal'proyekt

Card 3/3 1. Steel--Processing 2. Mathematical computers--Applications

SOV/32-25-5-34/56

28(2)

AUTHORS: Epshteyn, V. L., Frid, A. M.

TITLE: On the Computation of Statistical Characteristics on Punched Card Computers (O vychislenii statisticheskikh kharakteristik na schetnoperforatsionnykh mashinakh)

PERIODICAL: Zavodskaya Laboratoriya, 1959, Vol 25, Nr 5, pp 613-616 (USSR)

ABSTRACT: The use of punched card computers (PC) in practice is usually limited to assortment and grouping and a compilation of frequency characteristics on the tabulators. The analysis of the mathematical structure of statistical characteristics (Table) shows that the latter may be divided into two groups with respect to computation: the first group comprises operations, as the summation of a larger number of data, the computation of the sum of products (including the sum of squares) and various operations of grouping; the second group covers division, extraction of roots etc. Thus, the first group is a comprehensive one, whereas the second group comprises operations which are carried out according to data obtained by operations of the first group. On this basis a uniform scheme is worked out for the present case for the purpose of adjusting the tabulator

Card 1/2

On the Computation of Statistical Characteristics on Punched Card Computers

T-5, which comprises the entire complex of mass computations in the course of statistical investigations; this is done by the method of series of numbers (Ref 1). Three diagrams are given in a table. There are 1 table and 1 Soviet reference.

ASSOCIATION: Stal'proyekt (Stal'proyekt)

ERSHTEYN, V. L.

report to be presented at the 1st Intl Congress of the Intl Federation of Automatic Control, 25 Jun-5 Jul 1960, Moscow, USSR.

LERNER, A. Ya.,- "The application of a self-adjusting system of automatic control"
MALOV, V. S., PRIKLADNIKOV, A. M., and [illegible] A. - "Industrial telemeasurement systems and digital technique"
MEYEROV, M. V. - "Some peculiarities of the structure of multi-communications regulation systems"
MIKHAYLOVSKIY, V. N. - "Evaluation indexes and the possibility of increasing the quality of telemeasurement systems"
NEMCHINSKIY, V. V. - "Concerning the problem of established routines in automatic regulation systems"
NECHIPORENKO, K. A. "Principals of construction of digital double code automatic compensators"
NEYMARK, Yu. I. - "Concerning the relation of systems of automatic regulation with the parameters of periodic movements"
NIKOLAYEV, N. S., and ERSHTEYN, V. L. - "System of automatic control of cutting of rolled metal on a continuous bar mill with the use of digital calculating machines"
ONUFRIYENKO, V. M. - "Some principles of organizing systems of complex automation of large scale chemical production and optimization of these systems"
OSTROVSKIY, G. M. - "Systems of automatic regulation with intermittent change of parameters"
PEROV, V. P. - "Statistical synthesis of impulse systems"
PETROV, B. N. - "The invariant principle and its application in the calculation of linear and nonlinear systems"
PIVEN, V. D. - "The problem of autonomy in the technique of automatic control"
POPOV, E. P. - "Some problems of synthesis of automatic control non-linear systems"
PUGACHEV, V. S. - "Method of determining the optimum system with non-linear relation of the observed function with the parameters of the signal"
PUTSILLO, V. P., PETROV, V. V., NIKOLNOV, R. V., and VOLODIN, R. R. - "Principles of construction of a single class of extra control systems for automating production processes"
ROGINSKIY, V. N. - "The development of the theory of relay devices in the USSR"
ROZENBLAT, M.A. - "Dynamic characteristics of cores with right angle hysteresis winding and their influence on magnetic boosters"
ROZONER, L.I. - "Varied methods of investigating the quality of automatic control systems"
RUSHINSKIY, V. M. - "Dynamics of automatic regulation of boiler-turbine units"
SHUMILOVSKIY, N. N., MEL'TTSER, L. V., NAUMOV, A. A., MIN-CHZHI-CHZHUN, and PIVOVAROV, L. A. - "Automatic control of composition of multi-ingredient mixtures"
SHAGOVSKIY, R. S., and SEGALIN, V. G. - "Some results of work for the utilization of radioactive radiation for automatic control of mining machinery"
SOLODOVNIKOV, V. V., BATKOV, A. M., BABURIN, V. M., VAL'DENBERG, Yu. S., MATVEYEV, P. S., and POKROVSKIY, A. K. - "Analyses and synthesis of automatic control systems with the aid of calculating machine facilities"
STAKHOVSKIY, R. I., FITSNER, L. N., SHENBROT, A. B. - "Automatic optimizers and their use for solution of variation problems in automatic synthesis"
STRAKHOV, S. V. - "A system of alternating current electric drives with autonomous power supply"
TAKSAR, I. M., and YANUSHKOVSKIY, V. A. - "Apparatus for technical control of production with the use of nuclear radiation"
TEODORCHIK, K. F., and BENDRIKOV, G. A. - "Methods of organizing the trajectory of roots of linear systems and qualitative determination of type of trajectory"
TSYPKIN, Ya. Z. - "Elements of the theory of digital automatic systems"
VERCHKOVSKIY, D. B., KASHIRIN, V. A., CHUGIN, Yu. I., and SHASTOVA, G. A. - "Static stability of telemeasurement"
VENIKOV, V. A. - "Interactions of a mathematical modeling and calculating technology experiment in calculating loads in electrical systems"

16.9500

S/024/60/000/006/008/015
E140/E463

AUTHOR: Epshteyn, V.L. (Moscow)

TITLE: Use of the Method of Operators in the Design of Automatic Controls

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Energetika i avtomatika, 1960, No.6, pp.151-154

TEXT: Lyapunov's operator method (Ref.1,2,4) is applied to the design of complex automatic control systems. The particular example used here to illustrate the method is that previously published by the author (see Nikolayev and Epshteyn, paper presented at the First IFAC International Congress, 1960, Moscow - Ref.9), a digital system for controlling the cutting of steel sheet in continuous sheet mills. The method of operators, originally developed for computer programming (both manual and automatic) retains all its advantages when applied to the synthesis of automatic control system structures. In particular it facilitates the non-trivial transformation of the algorithms, programs and the structures connected with these, the modelling and manipulation of control system algorithms in digital computers and, finally, the

Card 1/2

S/024/60/000/006/008/015
E140/E463

Use of the Method of Operators in the Design of Automatic Controls

development of programs for the automatic synthesis of control systems using the same techniques as automatic programming. There are 1 figure and 9 Soviet references.

SUBMITTED: February 23, 1960

Card 2/2

EPSHTEYN, V. L.

Cand Tech Sci - (diss) "Automatic control of pattern lay-out in rolling by means of digital computers." Moscow, 1961. 11 pp; with diagrams; (Academy of Sciences USSR, Inst of Automation and Telemechanics); 120 copies; price not given; (KL, 10-61 sup, 220)

NIKOLAJEV, N.S. [Nikolayev, N.S.] (Moskva); EPSTEIN, V.L. [Epshteyn, V.L.] (Moskva)

Automatic control of making and cutting the rolled products by means of digital control computers. Hut listy 17 no.5:349-353 My '62.

EPSHTEYN, V.L.

Dissertation defended at the institute of Automation and Telemechanics for the academic degree of Candidate of Technical Sciences:

"Automatic Control of Laying Out of Rolled Iron Using Digital Computers."

Vestnik Akad Nauk, No. 4, 1963, pp. 119-145

ACCESSION NR: AT4041985 S/2582/64/000/011/0123/0129

AUTHOR: Kotyuzhanskiy, G.A., Sholom, M.M., Epshteyn, V.L.

TITLE: An algorithm for selecting symbols of high probability in a system having limited storage capacity

SOURCE: Problemy* kibernetiki, no. 11, 1964, 123-129

TOPIC TAGS: computer programming, medical diagnosis, machine translation, symbol selection, storage capacity, memory sparing

ABSTRACT: An algorithm is derived which could be useful in solving a wide range of problems such as: 1. automatic translation using an author's dictionary, each word being subjected to the selection algorithm which selects the most frequently used words and reinforces them in the operational memory; and 2. medical diagnosis, in which all possible combinations of symptoms and diseases are sorted to eliminate unlikely combinations, the most probable diagnosis being obtained from the relative probabilities of the various disease-complexes with respect to the symptom-complexes, also depending on the season, occurrence of an epidemic, whether the patient was already undergoing treatment, etc. Generalization requires a source generating symbols in a certain alphabet, not more than 'm' symbols being stored for technical reasons, and an algorithm allowing storage of the

Card 1/2

ACCESSION NR: AT4041985

'm' mostprobable symbols (the nucleus)from a number k >> m. The symbols fed to the computer are more numerous than the number of addresses which can be stored. It is therefore required to replace the less frequent by the more frequent symbols if the former enter ahead of the latter. This calls for the notion of a threshold number, determining the resolving power of the algorithm, criteria for raising and lowering the threshold and logical criteria for relative probability. The paper discusses these requirements, and the algorithm is reduced to a working scheme, after which a program is written consisting of three separate, but interdependent parts, the first modulating the information source, the second calculating absolute and relative frequencies for symbols entering from the source and the third carrying out the selection algorithm. An example is given of analysis of the statistical structure of a literary text. The method was suggested by A. A. Lyapunov, and acknowledgement is given to M. M. Bongard for his valuable comments. Orig. art. has: 3 figures and 6 equations.

ASSOCIATION: none

SUBMITTED: 19Feb62 ENCL: 00 SUB CODE: DP

NO REF SOV: 002 OTHER: 001

Card 2/2

LERNER, A.Ya. (Moskva); EPSHTEYN, V.L. (Moskva)

Information storage in control machine memory. Avtom. i telem. 25 no.10:1493-1501 O '64. (MIRA 17:12)

L 2732-66 EWT(d)/EWP(v)/EWP(k)/EWP(h)/EWP(1) IJP(c) GS/BC
ACCESSION NR: AT5023169 UR/0000/65/000/000/0134/0140

52
79
B41

AUTHOR: Nikolayev, N. S. (Moscow); Epshteyn, V. L. (Moscow)

TITLE: The "Prokat" computer control unit 14

SOURCE: Vsesoyuznaya konferentsiya po avtomaticheskomu operativnomu upravleniyu proizvodstvennymi predpriyatiyami. 1st, Moscow, 1963. Avtomaticheskoye operativnoye upravleniye proizvodstvennymi protsessami (Automatic operative control of production processes): trudy konferentsii. Moscow, Izd-vo Nauka, 1965, 134-140

TOPIC TAGS: metallurgic industry, computer control system, computer system, automatic control equipment, automatic control

ABSTRACT: The present paper describes a system of operative control of rolling production, called "Prokat." The unit is intended for construction at one of the large metallurgical plant complexes. The paper outlines the technological-economical assumptions underlying the specification of the unit, gives a detailed description of the structural diagram, and presents a system for the realization of the control algorithms by means of a universal computer with a speed of the order of 5000 operation/sec. The results are transmitted in the form of commands onto the signal panel and are then fed into the local computers and into the information units of the dispatcher for surveying. "L. N. Sorokina, A. M. Frid, and V. L. Epshteyn (Supervisor) participated in the development of the

Card 1/2

L 2732-66
ACCESSION NR: AT5023169

algorithms and of the structure. The equipment of the computer section was developed by Yu. A. Grishkov, A. V. Muromskiy, and N. S. Nikolayev (Supervisor). "Orig. art. has: 2 figures.

ASSOCIATION: None

SUBMITTED: 11May65 ENCL: 00 SUB CODE: IE,DP

NO REF SOV: 002 OTHER: 000

Card 2/2

L 2217-66 EWT(d)/EWP(v)/EWP(k)/EWP(h)/EWP(l)

ACCESSION NR: AP5022980 UR/0103/65/026/008/1403/1409
62-506:519.14

AUTHOR: Epshteyn, V. L. (Moscow)

TITLE: Applications of the theory of graphs to the description and analysis of information flow patterns in control systems

SOURCE: Avtomatika i telemekhanika, v. 26, no. 8, 1965, 1403-1409

TOPIC TAGS: information processing, graph theory, automatic control R and D, mathematic matrix

ABSTRACT: The description and study of information flow is the first step made during an investigation of control systems. However, traditional engineering tools - diagrams and explanatory statements - are not capable of handling this task because 1) cybernetic systems consist of a very large number of elements connected by a complex interaction scheme thus transcending the power of the graphical presentation, and 2) explanatory statements become unduly cumbersome and insufficiently formalized. Consequently, the author proposes the use of the adjacency matrix of information graphs for the analysis of information flow patterns. The results of the study show that the model as a whole and the individual elements of its analy-

Card 1/2

L 2217-66

ACCESSION NR: AP5022980

sis can be simply realized on universal computers. The method is illustrated by the study of the flow of data of operative accounting in a system of operative control. Orig. art. has: 2 formulas and 2 figures.

ASSOCIATION: None

SUBMITTED: 03Jun64 ENCL: 00 SUB CODE: DP, IE

NO REF SOV: 003 OTHER: 003

Card 2/2

L 26067-66 EWP(k /EWT(d)/EWP(h)/EWP(l)/EWP(v)
ACC NR: AP6004559 SOURCE CODE: UR/0103/66/000/001/0166/0184

AUTHOR: Bermant, M. A.; Boyarchenkov, M. A.; Epshteyn, V. L.

ORG: none

TITLE: The third all-union conference on automatic control (engineering cybernetics)

SOURCE: Avtomatika i telemekhanika, no. 1, 1966, 166-184

TOPIC TAGS: automatic control, scientific conference, cybernetics, automation, automatic control system, optimal automatic control, nonlinear automatic control system, pattern recognition, queueing theory, analog computer, remote control system, self adaptive control

ABSTRACT: The Third All-Union Conference on Automatic Control (Engineering Cybernetics) was held in Odessa (on board the ship "Admiral Nakhimov"), from 20 to 26 September 1965. Some 1100 Soviet scientists and 52 scientists from England, Bulgaria, Hungary, East Germany, Italy, Norway, the United States, Czechoslovakia, Finland, West Germany, Yugoslavia, and Japan attended the conference. Among the Soviet scientists were 20 academicians and corresponding members of the academy of sciences USSR and of the academies of Soviet republics, over 100 doctors of sciences, and some 400 candidates of sciences. In his introductory remarks at the plenary session, Academician V. A. Trapeznikov, director of the Institute of Automatics and Telemekhanics, reviewed the progress made during the past twelve years (since the Second All-Union Conference) in the theory of automatic control and its applications. He noted that the theory of automatic control, which once was a key discipline in automation, had become the

UDC: 061.3(47):62-506.1

general theory for controlling various complex processes and had acquired the name "engineering cybernetics." In a paper entitled "Automatic control and economics," presented at the plenary session, Trapeznikov stressed that theoretical studies in this field are intolerably far behind practical needs and proposed new economic criteria of automation. In a paper by Ya. Z. Tsypkin entitled "Adaptation, learning, and self-learning in automatic systems," also presented at the plenary session, the problems of adaptation and learning were analyzed from a certain unified point of view which made it possible to use the same approach to problems which earlier appeared to be quite distinct. The new concept presented, which is based on the iterative methods of stochastic approximations, made it possible not only to generalize the known results, but also to obtain new results in the fields of identification, control with incomplete information, etc. A large number of problems of adaptation and learning theory which require solution were formulated. Over two hundred scientific papers were presented in seventeen sessions. Papers presented at Session 1 dealt with formulation of new problems in the theory of multiloop and invariant systems and with wide application of new methods to the solution of classical problems of optimum control theory. A series of articles were dedicated to problems of optimum control of multiloop systems and to invariance and self-control problems in many-dimensional, essentially nonlinear, automatic systems. Attention

was paid to problems of the sensitivity of automatic control systems to external and parametric distrubances. The papers presented at Section 2 were concerned with frequency methods for studying the stability of continuous as well as discrete nonlinear systems, determining periodic regimes in many-dimensional nonlinear automatic control systems and systems with a variable structure. Almost all papers presented at Session 3 dealt with further development of statistical methods for the synthesis and analysis of control systems. Session 4 was dedicated to certain important particular problems of the well-established theory of optimum processes. In Session 5 two principal approaches to the solution of pattern recognition problem were presented: the probabilistic (statistical) and deterministic. Some papers dealt with comparisons of these two approaches. The papers presented in Session 6 were concerned with the following trends in the theory of discrete automatic control systems: 1) statistical dynamics of nonlinear discrete control systems; 2) stability and quality of nonlinear discrete systems; 3) methods for designing linear discrete systems. In Session 7 the majority of the papers were concerned with the synthesis of relay systems. Of particular interest were the papers on the synthesis of diagnostic systems and the reliability of relay devices. The papers presented in Session 8 (adaptive systems), dealt with 1) extremal systems and 2) systems with automatic adjustment of control parameters. In Session 9 (the application of computer technology to the control of manufacturing processes), the problems of selecting the parameters and the structure of computers for controlling continuous processes were analyzed. Session 10 was devoted to problems of the theory of designing large systems. The following main questions were considered: methods of Program Evaluation and Review Technique (PERT) systems, optimal distribution of time and resources in planes

of operation, and some problems of queueing theory. Session 11 was devoted to the problem of determining the characteristics and properties of control systems and their mathematical simulation (determining of equations describing the control plant). Session 12 dealt with applications of optimal and self-adapting systems to various manufacturing processes (chemical, metallurgical, mechanical). Great interest was shown in a paper by B. V. Vol'ter, I. Ye. Sal'nikov, and others entitled "Theoretical aspects of automatic control of polymerization reactors". Problems connected with establishing new principles for constructing the elements of automatic control on the basis of latest achievements in physics, chemistry, and biology and with developing new methods for designing and constructing these elements were analyzed in Session 13 (new elements). A large number of papers presented in Session 14 (devices for automation of manufacturing process) were concerned with various problems of automatic electric drives. The papers presented in Session 15 (methods and means for mathematical simulation were concerned mainly with the modern trends of designing analog computers and with problems of utilizing them in automatic control systems. Development of pneumatic elements for analog computers was also considered. Session 16 was primarily concerned with problems of the structural reliability of redundant systems and the reliability of elements. Various methods for estimating the reliability of systems and for developing redundant systems were presented. The papers of the last session were dedicated mainly to the theory and principles of designing complex remote control systems. Remote control systems with pneumatic elements were considered. [FSB: v.2, no.4]

SUB CODE: 09 / SUBM DATE: none

BIRYUKOV, Pavel Fedorovich; DOTLIBOV, Arkadiy Mikhaylovich; ROMANETS, Tat'yana Yaropolkovna; EPSHTEYN, Vladimir L'vovich; VISHNEVYY, V., red.; YEREMINA, I., tekhn.red.

[Freestanding reinforced-concrete bathrooms; their manufacture and use] Nenesushchie zhelezobetonnye prostranstvennye sanitarno-tekhnicheskie kabiny; opyt izgotovleniia i primeneniia. Kiev, Gosstroiizdat, 1963. 37 p. (MIRA 16:6)
(Bathrooms)

BAKUL', V.N., kand.tekhn.nauk; ZAKHARCHENKO, I.P., kand.tekhn.nauk; VOLOSHIN, G.M., inzh.; EPSHTEYN, V.M., inzh.; OVCHAROV, V.I.

Diamond machining of a hard-alloy tool. Trakt. i sel'khozmash. no.3:33-35 Mr '65. (MIRA 18:5)

1. Ukrainskiy nauchno-issledovatel'skiy proyektno-tekhnologicheskiy institut sinteticheskikh sverkhtverdykh materialov i instrumenta (for Bakul', Zakharchenko, Voloshin, Epshteyn). 2. Glavnyy inzh. Khar'kovskogo zavoda "Serp i molot).

POTEYKO, A.D.; KARAS', L.M.; TIMCHUK, A.I.; EPSHTEYN, V.M.

Synthetic diamonds at the "Serp i Molot" Plant in Kharkov.
Mashinostroitel' no.10:37-39 O '64. (MIRA 17:11)

EPSHTEYN, V.M.

Study of the effect of temperature on the activity of different populations of root knot nematodes. Trudy probl. i tem.soveshch. no.3:124-127 '54. (MLRA 8:5)

1. Institut biologii Khar'kovskogo Gosudarstvennogo universiteta.
(Root knot) (Temperature--Physiological effect)

EPSHTEYN, V.M.

Some features of water balance of fresh-water leeches. Zool.zhur. 33 no.3:549-555 My-Je '54. (MLRA 7:7)

1. Kafedra gidrobiologii Khar'kovskogo gosudarstvennogo universiteta.
(Leeches)

EPSHTEYN, V.N.

A new species of leeches from the Amur basin [with summary in English]. Zool.zhur. 36 no.9:1414-1417 S '57. (MIRA 10:10)

1.Kafedra zoologii Khar'kovskogo zootekhnicheskogo instituta.
(Amur Valley--Leeches)